DETAILS OF THE WEATHER OF THE MONTH IN THE UNITED STATES.

CYCLONES AND ANTICYCLONES.

By A. J. HENRY.

Cyclones.—Practically all of the cyclones of the month first appeared in the daily Weather Maps off the coast of British Columbia and either moved thence eastward along the northern circuit or secondaries were developed over the plateau region and later crossed the mountains and advanced eastward in the form of NE.–SW. troughs of low pressure. High pressure, which prevailed over the Great Basin from the 13th until the close of the month, seemed to retard and, in some cases, to prevent the eastward movement of cyclones that appeared off the Washington coast. From the 1st to the 13th, secondary cyclones passed across the mountains south of Wyoming. After the 13th the movement was more directly eastward along the northern circuit. None of the cyclones was of pronounced type except that one which moved in from the Pacific on the 10th at a time when the surface was snow-covered, although surface temperature west of the divide on this date was above freezing; east of the divide the temperature was considerably below zero and there was a strong temperature-pressure gradient extending SE.–NW. across Wyoming, southwestern Montana, and eastern Idaho. The Weather Maps of the 11th and 12th are typical of the surface conditions under which a well-developed cyclone crosses the Rocky Mountains in the winter season. The motion from the Pacific is southeastward until the Great Plains of Colorado and Kansas are reached, thence northeast to the Lake region. It is worthy of note that the deep cyclone over southern Idaho on the 11th was immediately followed by a strong anticyclone which persisted in that region until the close of the month, as mentioned in the next paragraph.

Anticyclones.—The weather was distinctly under anticyclonic control the greater part of the month. A strong anticyclone moved from the northern Rocky Mountain region on the 1st to the middle Atlantic coast by the 4th. This was followed by two others, with a cyclone intervening between each of them. The pronounced cyclone of the 10th was followed by a strong anticyclone which had become firmly established over southern Idaho on the morning of the 13th. It remained practically stationary with undiminished intensity during the 14th–16th. Then pressure fell somewhat in its northwestern quadrant, thus automatically shifting the center of highest pressure to western Colorado, where it remained from the 20th to 25th. On the 26th, pressure having risen over Idaho and Nevada, the center was again established over southern Idaho, where it remained until about the close of the month. The winter-pressure distribution thus described, so long as it continues, seems to have an important bearing upon the weather of the United States as a whole. Some of the associated conditions are as follows: Generally dry weather with frost in California away from the coast; Chinook winds east of the mountains in Idaho and western Montana; frequent alternations of high and low temperature east of the Mississippi and north of the Ohio but no severe cold.

THE WEATHER ELEMENTS.

By P. C. DAY, Climatologist and Chief of Division.

[Dated: Weather Bureau, Washington, Feb. 2, 1920.]

PRESSURE AND WINDS.

At the beginning of the month high pressure was advancing from the British northwest, and severe cold for the season had overspread most northern and central districts. The high area extended into the more eastern districts, and by the middle of the first decade had passed off the middle Atlantic coast. In the meantime there was a general reduction in pressure over northern and far western districts, but elsewhere the pressure still continued above normal.

During the latter half of the first decade pressure diminished over the South, and storm areas, forming over the Southwest, moved easterly, causing rain or snow over large areas. Toward the close of the decade, however, high pressure again moved into the Northwest and by the close it had advanced into the middle Mississippi Valley, where the sea-level values were nearly 31 inches, the highest ever observed in December at several points. In much of the West the coldest weather of the month was observed, about this time, the minimum temperatures over the Great Plains and Rocky Mountain regions on the morning of the 9th ranging from 30° to nearly 50° below zero (F.).

While this high area was advancing toward the Atlantic coast, there was a sharp reaction to lower pressure in the far West, which likewise moved eastward reaching the Atlantic coast about the middle of the second decade. In the far West, however, there was a quick return to above normal pressure and by the morning of the 14th sea-level pressure was near 31 inches in the northern plateau, the reading at Boise, Idaho, 30.96 inches, being the highest ever observed at that place. In connection with this high pressure, severe cold prevailed in the far Northwest, the minimum temperature falling to 50° or more below zero (F.) at exposed points in Idaho and Montana. The lowest temperatures ever observed in December occurred during this period at numerous places, and at some points they were the lowest observed in any winter month. High pressure and severe cold continued throughout most central and western districts until after the middle of the second decade; and in portions of the plateau, pressure remained high and severe cold continued until the end.

During the third decade of the month, lower pressure was the rule in practically all parts of the country, although a high area of moderate intensity was maintained over the plateau region during the greater part of the decade, assuming considerable proportions at times, but confined in the main to districts west of the Rocky Mountains, until the end of the month when it shifted to the Missouri Valley and colder weather had again overspread the Northwest. In the central and southern portions of the country pressure was generally falling at the close of the month, with the lowest barometer readings over the middle Mississippi Valley.